REMARKS

Favorable reconsideration of this application, as presently amended and in light of the following discussion, is respectfully requested.

Claims 1, 4-9, and 11-13 are currently pending. Claims 10 and 14-20 have been canceled without prejudice; and Claims 1 and 4 have been amended by the present amendment. The changes to the claims are supported by the originally filed specification and do not add new matter.

In the outstanding Office Action, Claims 1 and 4-13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,402,791 to Saitoh et al. (hereinafter "the '791 patent") in view of U.S. Patent No. 6,162,178 to Garcia et al. (hereinafter "the '178 patent").

Amended Claim 1 is directed to an ultrasonic probe, comprising:

> a piezoelectric transducer for sending and receiving an ultrasonic wave; and
>
> a conductive substrate for applying current to the piezoelectric transducer,
>
> wherein the conductive substrate is arranged oppositely to a side face of the piezoelectric transducer and has an end portion that is arranged outside of the side face of the piezoelectric transducer;
>
> a conductive material is arranged in first and second corner portions formed by the piezoelectric transducer and the conductive substrate, the conductive material electrically connecting the piezoelectric transducer to the conductive substrate; and
>
> the conductive substrate has a signal wiring and an earth wiring, and a nonconductive material is arranged on the side face of the piezoelectric transducer between the first and second corner portions, the nonconductive material insulating a jointed portion of the piezoelectric transducer with the signal wiring from a jointed portion of the piezoelectric transducer with the earth wiring.

The changes to Claim 1 are supported by the originally filed specification and do not add new matter.[1]

Applicants respectfully submit that the rejection of Claim 1 (and all associated dependent claims) is rendered moot by the present amendment to Claim 1.

Regarding the rejection of Claim 1 under 35 U.S.C. § 103(a), the Office Action asserts that the '791 patent discloses everything in Claim 1 with the exception of "a nonconductive material insulating a jointed portion of the piezoelectric transducer with the signal wiring from a jointed portion of the piezoelectric transducer with the earth wiring,"[2] and relies on the '178 patent to remedy that deficiency.

The '791 patent is directed to a piezoelectric single crystal having a large electromechanical coupling coefficient. As shown in Figure 1, the '791 patent discloses a printed wiring board 9 connected to a lamination layer, such as a piezoelectric member 1, by bending the end portion of the printed wiring board 9 and tucking it into the lamination layer. Applicants note that in this configuration, the printed wiring board 9 would be bent at right angles and would be subjected to great stress. Further, as shown in Figure 1, the '791 patent discloses that a first electrode 4 is formed so as to cover the ultrasonic transmitting/receiving surface 3, one side surface, and a portion of the surface opposite to the transmitting/receiving surface 3 of the piezoelectric element 1. Further, as shown in Figure 1, the '791 patent discloses that a second electrode 5 is formed on the surface opposite to the ultrasonic transmitting/receiving surface 3 of each piezoelectric element 1 so as to be spaced apart from the first electrode 4 with a desired distance between them.[3] Further, as illustrated in Figure 1, the '791 patent discloses that a ground electrode plate 8 is connected to the first electrode 4,

[1] See, e.g., Figures 1 and 2 and pages 10 and 11 of the specification.
[2] See page 3 of the outstanding Office Action.
[3] See '791 patent, column 8, lines 55-63.

while a flexible printed wiring board 9 is connected to the second electrode 5 by soldering.[4] Thus, Figure 1 of the '791 patent clearly discloses a signal wiring connected to a first electrode, and an earth wiring connected to a second electrode **on opposite sides** of the ultrasonic probe.

However, Applicants respectfully submit that the '791 patent fails to disclose a conductive material arranged in first and second corner portions formed by the piezoelectric transducer and the conductive substrate, the conductive material electrically connecting the piezoelectric transducer to the conductive substrate, wherein the conductive substrate has a signal wiring and an earth wiring, as recited in amended Claim 1. In this regard, Applicants note that the Office Action does not specifically identify which element in the '791 patent reads on the conductive material recited in Claim 1, and does not specifically identify the "corner portion" previously recited in Claim 1.

Further, Applicants respectfully submit that, as admitted in the outstanding Office Action, the '791 patent fails to disclose a nonconductive material arranged on a side face of the piezoelectric transducer between the first and second corner portions, the nonconductive material insulating a jointed portion of the piezoelectric transducer with the signal wiring from a jointed portion of the piezoelectric transducer with the earth wiring. In this regard, Applicants note that since the '791 patent clearly discloses that the signal wiring and the earth wiring are located on opposite sides and are connected to different substrates, that there is no need for any nonconductive material to insulate jointed portions, as recited in amended Claim 1.

Further, Applicants respectfully submit that the '791 patent fails to disclose a conductive substrate having a signal wiring and an earth wiring arranged oppositely to a side

[4] See '791 patent, column 9, lines 1-4.

face of the piezoelectric transducer. Rather, the '791 patent discloses two conductive substrates on opposite sides of the transducer.

The '178 patent is directed to an ultrasonic transducer assembly including a transducer housing, an ultrasonic transducer mounted in the housing, the transducer including a piezoelectric element and a matching layer formed on the piezoelectric element; a first lead disposed in the housing; and an electrical lead conductive matching bridge disposed between the first lead and the piezoelectric element. As shown in Figures 5 and 6, the '178 patent discloses that the power signal wire 68 is electrically coupled to the piezoelectric element by the electrically conductive matching bridge 74. Further, as shown in Figures 5 and 6, the '178 patent discloses a non-conductive material such as U-V epoxy that creates a non-conductive potting 72 in the ultrasound transducer housing 56.

However, Applicants respectfully submit that the '178 patent fails to remedy the deficiencies of the '791 patent discussed above. In particular, Applicants respectfully submit that the '178 patent fails to disclose a nonconductive material arranged on the side face of the piezoelectric transducer between the first and second corner portions, the nonconductive material insulating a jointed portion of the piezoelectric transducer with the signal wiring from the jointed portion of the piezoelectric transducer with the earth wiring, as required by Claim 1. Further, the '178 patent does not disclose the conductive material arranged in first and second corner portions formed by the piezoelectric transducer and the conductive substrate. In this regard, it is unclear to Applicants what the conductive substrate is within the teachings of the '178 patent since the Office Action does not clearly indicate what element in the '178 device reads on this limitation.

Further, it is unclear to Applicants how the teachings of the '791 and '178 patents can be combined. In particular, it is unclear how the nonconductive material 72 disclosed by the '178 patent is to be combined with the ultrasound probe disclosed by the '791 patent. It is

unclear how the '791 probe is to be modified to include the nonconductive material 72, since the '791 patent does not disclose the first and second corner portions recited in Claim 1 and has substrates on opposite sides of the transducer. Thus, the '791 patent does not have a need for a nonconductive material arranged on a side surface of the piezoelectric transducer between the first and second corner portions recited in Claim 1, since the earth and signal wirings disclosed by the '791 patent are located on opposite sides of the transducer.

Further, Applicants note that the Office Action has not provided any motivation for combining the teachings of the '791 and '178 patents. In this regard, Applicants note that page 3 of the outstanding Office Action states that it would have been obvious to combine the teachings of the '791 and '178 patents "in order to achieve the claimed invention, in view of the teachings of Garcia (178)." However, Applicants respectfully submit that "in order to achieve the claimed invention" it is not motivation for one of ordinary skill in the art to combine the teachings of the cited reference, but is merely hindsight reconstruction of Applicants' invention. Further, the phrase "in view of the teachings of Garcia" is not specific. In this regard, Applicants note that, in *KSR International v. Teleflex Inc.*, the Supreme Court cited with approval a statement from *In re Kahn*: "rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." (*In re Kahn*, 441 F.3d 977, 988 (CA Fed. 2006) cited with approval in *KSR*). Thus, Applicants respectfully submit that the Office Action does not provide any suggestion or motivation to combine the teachings of the '791 and '178 patents. Rather, the Office Action merely vaguely refers to Garcia and states that the combination would be necessary in order to achieve the claimed invention.

For the reasons stated above, Applicants respectfully submit that the rejection of Claim 1 (and all associated dependent claims) is rendered moot by the present amendment to

Claim 1 and that Claim 1 patentably defines over any proper combination of the '791 and '178 patents.

Consequently, in view of the present amendment and in light of the above discussion, the outstanding grounds for rejection are believed to have been overcome. The application as amended herewith is believed to be in condition for formal allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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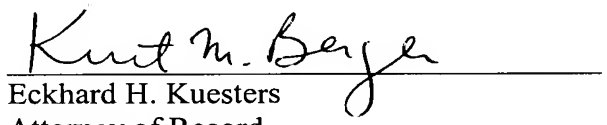

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